

Proposer's Capabilities

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Prime Consultant Overview

BC is among the most stable firms in the business with **70 years of continuous employee ownership**. We are one of the largest environmentally focused firms and a recognized leader in adapting state-of-the-art approaches to safeguard drinking water, improve vital infrastructure, and restore habitats to keep our communities thriving. We offer full-service engineering, construction, and program management services. **Our bottom line is the success of our clients.**

Our team members have helped deliver some of the most significant water projects in the region: program management for the \$249M LOTWP program, multiple pipeline design packages for TVWD's and City of Hillsboro's WWSP, and 30 years of history with the 120 mgd Everett Water Filtration Plant in Washington, including design of the original filtration system and several subsequent upgrades.

BC is also leading some of the largest and most complex program management efforts in North America, totalling more than \$9B in capital costs in the past 10 years. We develop customized, scalable solutions that meet our clients' specific needs.

Jon Holland will lead our team from the program management office or BC's Portland home office, which is located at 6500 SW Macadam Avenue, just minutes from PWB's downtown location.

Subconsultant Overview

We have identified several strategic partners for this effort that bring established knowledge of the Bull Run Filtration project pre-planning and related work. This includes: B&W, which supported the strategic communications and equity contracting effort for the program pre-planning; Confluence, which is conducting a corrosion control pilot for PWB; and Winterbrook, which has helped successfully permit some of PWB's largest projects.

BC has long working histories with many of the firms on our team, but we continually seek opportunities to reach additional potential partners and strengthen and build a core community of D/M/W/ESB firms. To this end, we have added new partners, including DAY CPM to augment our program management team, Aladon to support RCD/M workshops, and D/WBE firm ecoREAL to oversee Green Building Initiative compliance. We are **committed to exceeding the 20 percent goal** for this program through meaningful roles and firm participation representing the vibrant diversity of Portland.

BC SNAPSHOT

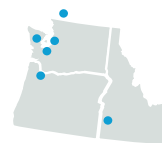
Program Managers for
\$9B capital costs

including
**award-winning
LOTWP
program**



Designer for
\$2.5B CM/GC Delivery
in Western U.S.

50+ WTPs
nationwide



6 Northwest
offices



54 offices nationwide
1,600+ staff nationwide

In business since

1947

100%

employee-owned
corporation



100% Environmental

Subconsultant Firm Biographies //

Our history of collaboration and shared culture of client service will translate to effective teamwork and high-quality results.

Firm	Areas of Expertise	Background (legal structure/years in business/number of employees)	Work with PWB	Work with BC	D/M/W/ESB
Akana	Site civil engineering: Multi-disciplinary services for planning, design, construction, and commissioning. Recently performed cultural resources survey for PWB's Carpenter Lane site.	S-Corporation 28 years/72 employees	✓	✓	✓
Aladon	RCD/M workshop facilitation: Support asset management solutions to proactively manage risk and optimize assets and operations.	S-Corporation 32 years/2 employees		✓	
Assessment Associates, Inc.	Environmental assessment: Phase I and II environmental site assessments to identify potential or existing environmental liabilities. Completed 20+ projects for BES since 2013, including investigations for street rights-of-way, undeveloped parcels, and commercial building properties.	S-Corporation 11 years/7 employees			✓
Asset Management Professionals, LLC	Asset data management: Focused on technical information delivery for utilities, including enterprise software architecture, and data management and modeling. Key partner on the LOTWP program to advance their asset management program.	Limited Liability Corporation 2 years/1 employee		✓	
B&W	Public outreach and equity contracting: Strategic communications, public involvement, and planning for the State of Oregon's most important water supply projects. Supporting PWB's program pre-planning by developing a communication framework and performing equity outreach.	Limited Liability Corporation 30 years/5 employees	✓	✓	✓
CFM Strategic Communications, Inc.	Public affairs: Communication specialists proactively addressing public and political stakeholder concerns for large infrastructure projects. Provided public affairs services as part of the LOTWP program management team.	Corporation 28 years/12 employees		✓	
CMTS	Construction inspection: Specializing in construction management, cost estimating, scheduling, construction engineering inspections, and document review for infrastructure projects. More than \$30 billion in construction value completed.	Limited Liability Corporation 34 years/128 employees	✓	✓	✓
Confluence Engineering Group	Pilot testing and distribution water quality: Water quality engineering, planning, and applied research for management, operations, and drinking water system regulation. Leading multi-year bench-and pilot-scale studies to determine optimal corrosion control treatment for PWB and its wholesale customers.	Limited Liability Corporation 10 years/6 employees	✓	✓	
DAY CPM	Controls services: Comprehensive project management and owner's representative services for complex, multi-million dollar projects here in Portland. Currently helping to manage the \$195M effort to modernize the historic Portland Building.	C-Corporation 16 years/48 employees	✓		
Eaton Synergies	Cost administration and reporting: Project and task leadership, research, and report development to support corporate responsibility, green energy initiatives, and stakeholder engagement.	Limited Liability Corporation 1 year/1 employee			✓
ecoREAL Solutions	Green building and sustainability: Green building design and construction services that balance efficiency, social equity, and aesthetic objectives.	Limited Liability Corporation 9 years/6 employees	✓		✓
Emerio Design, LLC	Surveying: Civil engineering, surveying, AutoCAD, Civil 3D, and drafting services, including for infrastructure design. Experience with other City bureaus, including program work on BES' Large-Scale Sewer Rehabilitation Program.	Limited Liability Company 12 years/54 employees		✓	✓
Global Transportation Engineering	Transportation engineering: Transportation planning and engineering, including traffic management plans, temporary traffic control, and traffic impact analysis. Helped develop design-build specifications for PWB's Willamette River Crossing project.	S-Corporation 3 years/6 employees	✓	✓	✓

Subconsultant Firm Biographies Continued //

Firm	Areas of Expertise	Background (legal structure/years in business/number of employees)	Work with PWB	Work with BC	D/M/W/ESB
Greenbusch Group, Inc.	Acoustic engineering: Consulting for mechanical noise control, noise and vibration monitoring, environmental noise control and analysis, and construction administration.	S-Corporation 29 years/22 employees	✓	✓	✓
Heritage Research Associates, Inc.	Archaeological investigation: Archaeological research and historic evaluation services. Supported PWB restoration projects, including Oxbow, Dabney, Kelly Butte Reservoir, and Bull Run.	S-Corporation 38 years/14 employees	✓	✓	✓
JLA Public Involvement	Public involvement: Provide communication between municipal agencies and community stakeholders. Will bring bench depth as support for B&W. Worked with PWB on the Powell Butte, Kelly Butte, and Mt. Tabor reservoir projects.	S-Corporation 30 years/21 employees	✓	✓	✓
Life Simplified, LLC	Cost control services: Support program management cost control by mapping scope to schedule and budget; monitoring cash flow, budget, variances, and actuals; and cost reporting. An integral member of the successful LOTWP program team.	Limited Liability S-Corporation 3 years/1 employee		✓	✓
NNA Landscape Architecture	Landscape architecture: Re-imagining environments through urban design, landscape architecture, stormwater management, and natural resource management. Worked with PWB to design the park center and create a trails master plan for the Powell Butte project.	Limited Liability Corporation 25 years/3 employees	✓	✓	✓
Project Controls Cubed, LLC	Scheduling: Program controls and project scheduling expertise including preparation, monthly analysis, and updates of detailed schedules. Providing scheduling analysis as part of the EchoWater Project program management team, and have developed the 4D/5D implementation to visualize program costs, construction sequencing, and risk mitigation strategy for the overall program.	Limited Liability Company 8 years/5 employees		✓	
Rau Innovations	Operability reviews: Operations consulting, including optimization of plant processes, operability reviews, and startup support. Bring firsthand experience transitioning WTP operations from no filtration to filtration.	Limited Liability Corporation 5 years/2 employees			
RhinoOne, LLC	Geotechnical engineering: High-level geotechnical support, including investigation, seismic hazard analysis, foundation design, and construction observation. Worked on PWB's Bull Run Conduit Trestle System Vulnerability and Washington Park sinkhole projects.	Limited Liability Company 9 years/4 employees	✓	✓	✓
SEFT Consulting Group	Seismic support: Mitigating earthquake risk for critical infrastructure through resilience planning, seismic assessment, and performance-based design. Currently involved in PWB's Willamette River Crossing and Portland Building Reconstruction projects.	Limited Liability Corporation 4 years/4 employees	✓	✓	✓
Staheli Trenchless Consultants	Trenchless engineering: Design, construction, and risk management services for trenchless technologies, including microtunneling and horizontal directional drilling. Previous pipeline work experience with PWB and City BES.	S-Corporation 21 years/10 employees	✓	✓	✓
Strategic Value Solutions, Inc.	Value engineering: Comprehensive value improvement and facilitation services focused on large, infrastructure-related programs. Staff have experience serving as a third-party value engineering facilitator for a variety of PWB projects.	S-Corporation 18 years/12 employees	✓	✓	
Universal Field Services, Inc.	Easement acquisition: Provide right-of-way acquisition services for infrastructure projects nationwide. Has provided on-call right-of-way services for the City Bureau of Transportation.	Corporation 60 years/400 employees		✓	
V&A Consulting Engineers, Inc.	Corrosion engineering: Field-based corrosion engineering solutions that maximize the life cycle of civil infrastructure systems.	Corporation 39 years/30 employees		✓	✓
Winterbrook Planning	Permitting: locally tailored solutions in land use and natural resource planning. Helped PWB achieve multi-tier land use approval and streamlined the permit review process for Bull Run Treatment System Headworks and Washington Park Reservoir Improvements.	Limited Liability Company 17 years/6 employees	✓	✓	✓

Similar Project Experience

In this section, we describe selected projects that demonstrate our ability to deliver large programs and innovative water treatment solutions for government agencies. An overview of our program management and water treatment experience is illustrated below, with specific projects relevant to PWB that were completed within the past 10 years on the following pages. The listed client references will attest to our performance and quality standards. These projects demonstrate BC's ability to deliver on time and within budget, while limiting surprises along the way.

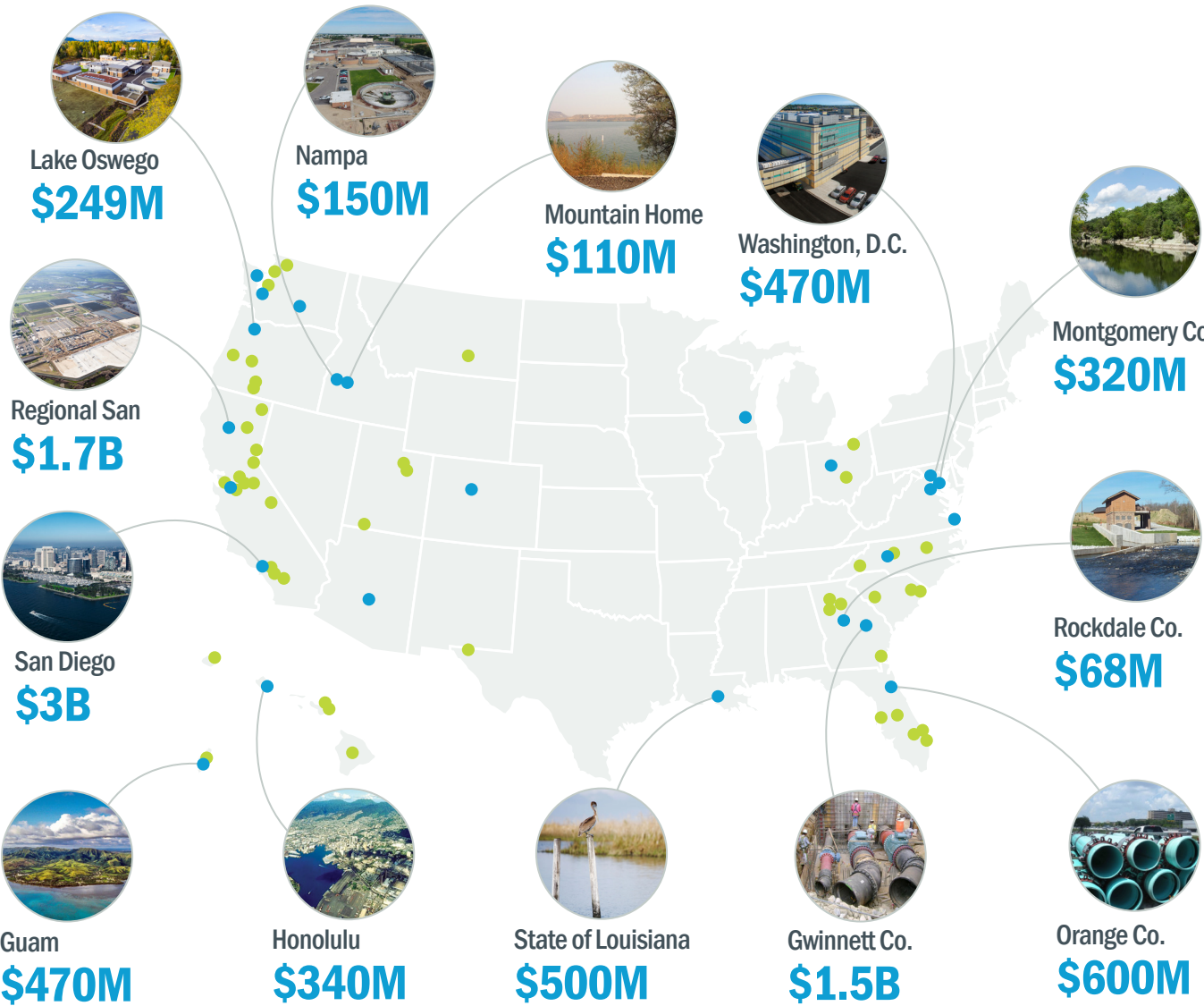
Proven Expertise for PWB's Critical WTP Program

\$9B+

in Program Management

50+

WTP Designs



- Program Management Services

Controls | Procurement | Design Management | Information Management | Staff Augmentation and Knowledge Transfer
- WTP Design Services

Planning | Design | Optimization | Pilot Testing | Automation | Startup/Commissioning | Operations

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Lake Oswego Tigard Water Partnership

Cities of Lake Oswego and Tigard, Oregon

“Jon and BC were outstanding partners for our \$250M water supply and treatment program. They proved adept and nimble in meeting our many challenges. If asked ‘would you hire BC again?’ the answer is a resounding ‘YES!’ BC has earned a valued relationship at all levels within the City that is built on trust, technical prowess, and their ‘client for life’ philosophy.”

— Joel Komarek, Project Director, City of Lake Oswego

BC guided this 8-year, \$249M water supply program to success.

BC managed the LOTWP capital program to plan, design, permit, and construct a multi-project expansion of this water supply system. This expansion provides Lake Oswego the ability to meet existing and future demands, replace aging/vulnerable facilities, and enhance reliability through regional interconnections, while providing Tigard an ownership stake in its primary supply facilities. BC staff spent over 5 years co-located in the client’s office. A major achievement was completely replacing an existing 16 mgd WTP with a new, resilient 38 mgd WTP on essentially the same footprint while maintaining full operations. The WTP uses high-rate, conventional filtration with intermediate ozone and mechanical solids dewatering.

Capabilities // Program management and oversight of seven critical projects; included permitting, procurement, bidding, construction, and operations support services.

Quality // Set and met program QA/QC standards via rigorous reviews by designers and program staff, including early participation by BC’s discipline, process, and construction experts and City and BC O&M staff.

Cost Control // Implemented controls across all phases of the program and coordinated with all stakeholders including the City’s finance department. Approach included proactive change management and thorough tracking and forecasting of costs, all documented in a PMIS tool that allowed real-time monitoring and reporting.

Completion Date
December 2017

Client Contact
Joel Komarek
4260 Kenthorpe Way
West Linn, Oregon
503.697.6588

Relevance

- Pilot plant
- Program management
- Drinking water program
- WTP design
- Asset management

See back cover for depiction of project definition through completion.



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EchoWater Project Program Management

Regional San, California

“BC, as the lead firm for the EchoWater Project, has been exceptional in producing the outcomes critical to our success. Working side by side with our staff, they have effectively guided critical decisions and aligned all stakeholders to ensure successful delivery of this fast-paced program with many moving parts.”

— Vick Kyotani, Deputy Director of Operations, Regional San

To deliver this \$1.7 billion program, BC is leading extensive upgrades to an 180 mgd advanced treatment facility on a fast-track, compliance-driven schedule.

As part of the co-located joint venture program management team, BC has helped the Sacramento Regional County Sanitation District (Regional San) meet every milestone to date for this fast-track treatment plant upgrade to address new permit requirements. This includes managing design and construction coordination on 17 separate infrastructure improvement projects and leading \$1M per day of site-wide construction and startup coordination. Additionally, BC helped save \$100M on the full-scale facility by completing a fast-track design-build-operate (DBO) pilot facility that set a new standard on filtration methods.

Capabilities // Program management services, including preliminary design, 3D/4D/5D design standard development, design reviews, program-wide scheduling, project sequencing, cost estimating, O&M support, construction management, and commissioning services.

Quality // Using BIM and 4D/5D tools to run clash detections, perform virtual walk throughs, and identify scope gaps in the schedules—significantly enhancing design quality.

Cost Control // Used standards and controls to minimize conflicts and keep change orders to less than 2 percent with more than \$400M in construction completed to date.

Completion Date
Ongoing

Client Contact
Vick Kyotani
8521 Laguna Station Road
Elk Grove, California
916.875.9001

Relevance

- Pilot plant
- Program management
- Compliance-driven schedule
- VDC

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Pure Water Program Management

City of San Diego, California

“This is a monumental undertaking, and we are so glad that Brown and Caldwell is at our side. They bring exceptional technical expertise in advanced water treatment, wastewater treatment, and pipelines to help us efficiently plan for and design the infrastructure to treat and convey the water. They have been a true partner that I can count on for leadership and technical guidance whenever I need it.”

— Amer Barhoumi, Senior Engineer, City of San Diego

BC is helping provide a safe, reliable, and drought-proof local drinking water supply for San Diego through this \$3 billion, 20-year potable reuse program.

The Pure Water Program is expected to produce one-third of San Diego’s drinking water by 2035. As the technical lead for the program and a subconsultant to Stantec, BC is providing engineering services for new water purification facilities, regulation and legislation development, Advanced Water Purification Demonstration Facility operation, additional treatment barriers for a potential direct potable reuse (or source water augmentation) project, and an education and outreach program. An initial 30 mgd water purification facility is planned to be operational by the end of 2021 with a long-term goal to produce 83 mgd of purified water by 2035.

Capabilities // Providing program management, planning, permitting assistance, development of the Title 22 Engineering Report, preliminary design, final design oversight, and operational readiness review for the water purification facility expansion.

Quality // Responsible for quality of design products and making certain deliverables meet City standards as well as program schedule and budget constraints.

Cost Control // Designing a conveyance/treatment strategy that will save roughly \$30M in lifecycle costs. BC has also performed an operational readiness assessment for the new facilities and evaluated the cost implications of various operational scenarios.

Completion Date
Ongoing

Client Contact
Amer Barhoumi
9665 Topaz Way
San Diego, California
858.292.6364

Relevance

- Program management
- Drinking water program
- New AWTP
- Operations support

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Richland Creek Reservoir Water Supply Program Management

Paulding County, Georgia



BC is managing this \$200M infrastructure program to create an independent, reliable drinking water supply that meets long-term community needs.

The program consists of a new drinking water reservoir and water treatment facility that uses coagulation and flocculation, dissolved air flotation, filtration, and post-filtration contactors housing granular activated carbon. These facilities will enable Paulding County to own and fulfill its long-term water supply needs through 2060. The program is being delivered via the construction manager at risk (CMAR) method (i.e., CM/GC in Oregon); a decision that shortened the program schedule and reduced costs.

Capabilities // Program management, utility performance, procurement support for alternative delivery, and design services for a new WTP and other water infrastructure.

Quality // Refined project concepts through program validation, confirmed baseline schedules and budgets, and established design delivery methods that helped meet cost objectives.

Cost Control // Maximized value of past and ongoing efforts, aligned funding opportunities, controlled capital costs, and minimized O&M costs. In addition, the decision to use CMAR delivery reduced program costs by \$15M.

Completion Date
Ongoing

Client Contact
David Austin
240 Constitution Boulevard
Dallas, Georgia
770.443.7550

Relevance

- Program management
- Drinking water program
- New WTP
- CMAR delivery

Similar Project Experience Continued //

Program Management Office
Guam Water Authority (GWA), Guam

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BC is managing a 7-year, \$450M program for GWA.

BC is the program manager for a 7-year, \$450M program focused on regulatory compliance, capital improvement plan (CIP) implementation, staff development, and overall utility advancement. The program includes projects to upgrade a surface water membrane treatment plant, improve 628 miles of water distribution, replace 29 water storage reservoirs, upgrade and improve 120 groundwater wells, and upgrade five wastewater treatment plants (WWTPs) and 298 miles of associated collection systems. Since 2012, BC has helped GWA save more than \$7M through clear scoping, design and contractor negotiations, and careful cost-to-benefit analysis. BC has also identified \$41M in new financial resources through grant funding and effective cash-flow modeling.

Completion Date
Ongoing

Client Contact
Thomas Cruz
688 Route 15
Mangilao, Guam
671.300.6036

Capital Program Management
Honolulu Board of Water Supply (BWS),
Hawaii

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BC is helping to manage an \$80M CIP for BWS.

BC is providing program management services to the Honolulu BWS to improve execution of a capital program that is growing from \$80M to approximately \$200M over the next 10 years. BC is also helping optimize BWS' organizational structure and work flow processes to support preventive/predictive maintenance and operations, including tools, processes, and training to improve consistency and sustainability. As a result of these efforts, BWS is improving funding and CIP predictability, clarifying level-of-service goals and metrics, improving schedule and budget performance on projects, providing staff development in support of utility goals, and capturing institutional knowledge to provide lasting value to ratepayers.

Completion Date
Ongoing

Client Contact
Ellen Kitamura
630 S Beretania Street
Honolulu, Hawaii
808.748.5000

Mountain Home Air Force
Base Water Supply
Department of Water Resources, Idaho

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BC is leading a fast-track pilot study to inform treatment decisions.

BC is serving as owner's advisor (OA) to the State of Idaho for the high-profile Mountain Home Air Force Base water supply project that will reduce reliance on declining aquifers by providing a new source of supply from the Snake River. This DBO project includes a new water treatment facility and intake structure, pipeline, and pumping stations. BC is helping to balance prescriptive and performance-based requirements in the DBO contract, and strategically conduct pilot testing and procurement concurrently to advance quickly. The project requires an aggressive focus on schedule to secure beneficial water rights in 2021.

Completion Date
Ongoing

Client Contact
Randy Broesch
322 E Front Street
Suite 648
Boise, Idaho
208.287.4879

Everett WFP Improvements
City of Everett, Washington

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BC helped Everett transition from no filtration to filtration.

BC has been supporting improvements to the City of Everett's 120 mgd water filtration plant for more than 30 years, including design of the original filtration system and our current role as OA for design-build replacement of the clearwell roof. One of BC's most significant projects involved converting the original filtration system to deep-bed monomedia. BC conducted pilot testing to prove the concept and then led design, construction management, startup, and operator training for the new facilities. Converting the existing filters was less than half the cost of building additional filter beds, minimizing capital outlays and long term O&M costs.

Completion Date
Ongoing

Client Contact
Mark Weeks
3200 Cedar Street
Everett, Washington
425.257.8201

Green Building Experience

BC has developed and implemented sustainability initiatives for our clients that range from utility performance and business process optimization to Leadership in Energy and Environmental Design (LEED) facility planning and design. We have helped several clients develop and plan projects through Envision, which has direct application to infrastructure projects. For Portland design projects, we have employed a variety of sustainable design options and construction practices, including green roofs and pervious pavement to minimize stormwater runoff and pollution and pumps and electrical equipment that are energy efficient.

We have augmented our in-house expertise with Summer Gorder of ecoREAL Solutions, who specializes in project administration to achieve sustainability goals. She uses a system of tools and services to help maximize LEED certification through design, construction, and the ongoing life of the facility. These tools include proprietary green building information management (GBIM) software that offers a cost-effective means of monitoring and tracking

LEED credits—everything from specifications to submittals.

- For the **\$195M Portland Building Reconstruction**, Summer is working with DAY CPM as the owner's representative to identify sustainability strategies for Energy Trust of Oregon Path to Net Zero and LEED and Well Building enhancements.
- For the **Marriott Pearl** construction project, Summer and her team helped achieve an unprecedented 100 percent construction credit approval for the project from LEED Green Building Certification Inc.
- For the **\$300M Multnomah County Central Courthouse** project, using the GBIM software for health and material tracking and verification is saving hundreds of hours in LEED documentation and helping to avoid costly RFIs.
- For **Portland Union Station**, ecoREAL is preparing a sustainability master plan to implement a holistic approach to sustainable design in the building renovation.

Overall Management Approach

Our management approach, described in more detail in Section 4, is to place the best people in positions where they excel and foster an environment of communication and collaboration. This attitude prevents silo formation, which almost certainly causes project deterioration. We keep the big picture in mind while also paying close attention to the details.

Resource Availability

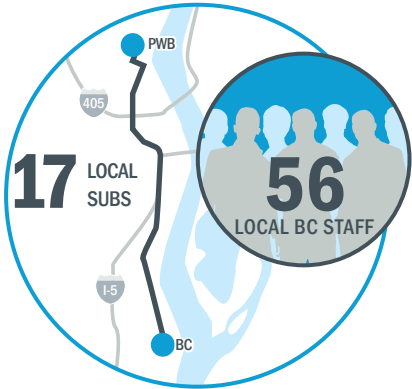
We are committed to providing the resources necessary to support PWB in the manner needed, at the time needed. This project will be a priority for us, but we will ramp up or down as the requirements of the program dictate. That means we will not have a large group of staff relocated and “camping” on the project when it is not needed. This outlook provides the best value to PWB.

Quality Assurance/Quality Control (QA/QC) and Cost Control

BC's proven approach to quality and cost control includes rigorous best standard practice and procedure application, and continuous and proactive cost controls using the best tools in the industry. These principles are inherent in the systems and tools we use internally.

Management and Organizational Capabilities

The team we assembled will truly be an extension of your staff. The ultimate governance of the program rests with PWB's program director and the Executive Oversight Committee, which will set the vision and overall program objectives. Our role will be to develop a strategy necessary to implement and execute the approach for success. A critical component of our structure is a commitment from the top and the experience and leadership of our Program Manager Jon Holland. Supported by a core team committed to this program, Jon will work closely with PWB's program director to guide the program onward. The team will use a strong technical understanding and interpersonal skills that combine the array of complex details and information from across the program, and convey it as a simple, clear, and accurate report to the leadership.



Local engineering, program management, and construction capabilities, and the ability to leverage nationwide resources.